

Appl. No. 10/074,954
Amtd. dated Jan. 04/2004
Reply to Office action of Nov. 4, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented) A polishing apparatus having a ditched ring for preventing wrinkling of a polishing pad that borders a substrate during chemical mechanical polishing, comprising:

a rotatable head assembly having a shallow recessed face adapted to centerly hold a substrate;

a non-rotating cylindrical actuator assembly coaxially oriented about the outer edge of said rotary polishing head assembly;

a rotary polishing platen having a polishing pad surface facing said substrate;

a polishing slurry containing a mechanical abrasive deposited on said polishing pad;

a ditched ring removably attached to a bottom surface of said non-rotary cylindrical actuator assembly, said ditched ring having a bottom surface with a multiplicity of conduit grooves formed therein, said conduit

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grooves permitting a boundary layer of abrasive slurry to flow unimpeded to a rotating substrate while preventing wrinkling of said polishing pad.

Claim 2 (original) The apparatus of claim 1, wherein said cylindrical actuator assembly is vertically floatable with respect to said rotatable polishing head assembly.

Claim 3 (original) The apparatus of claim 1, wherein said ditched ring further comprises:
a bottom section of a reduced wall thickness of approximately 5 mm;
a multiplicity of conduit grooves formed in said bottom section of ditched ring permitting a boundary layer of abrasive slurry to flow unimpeded to a rotating substrate;
said conduit grooves formed in pairs, each groove formed on either side of a center coordinate axis of said ditched ring;
said conduit grooves pairs are radially concentric and developed from a point outside of said ditched ring on said center axis;
said center coordinate axis of said conduit grooves is coincident with rotatable axis of the polishing platen.

Claim 4 (original) The apparatus of claim 2 wherein said conduit grooves are substantially 0.4 mm wide.

Claim 5 (original) The apparatus of claim 2 wherein said conduit grooves are radially concentric with a spacing between of approximately 20 mm.

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Claim 6 (currently amended) The apparatus of claim 1 wherein a [[said]] reduced wall thickness at the bottom of said ditched ring is configured to displace wrinkles from the outer edge of said substrate to the outer periphery of the ditched ring.

Claim 7 (currently amended) The apparatus of claim 2 wherein [[said]] providing radially concentric conduit grooves form radial tracks of a metered volume of abrasive slurry on surface of said polishing pad[[;]].

Claim 8 (original) The apparatus of claim 1 wherein the use of said ditched ring during chemical mechanical polishing of substrates uniformly removes microscratches.

Claims 9-16 (canceled)